

Observations On the IBCT and the FBCB2

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This article is based upon a study I conducted at Fort Lewis concerning the Interim Brigade Combat Team (IBCT) and the Force XXI Battle Command, Brigade and Below (FBCB2) information system. My principal duties as a data collector included observation of and commentary on the doctrine and tactics of the IBCT, and observation and commentary on the efficacy and integration of the FBCB2.

I draw my conclusions from direct observation of the IBCT and the FBCB2, and discussions with leaders and operators from the battalion commander down to the soldier level. In addition, my military experience and civilian education, viewed as a whole, provide me with a solid background against which to evaluate the incorporation of advanced information systems into a military force at the battalion/brigade level and below.

I agree with the senior Army leadership concerning the need for a major force revision in light of emerging geopolitical realities—global American military dominance, the emergence of asymmetric threats, the absence of a regional conventional threat capable of force projection, continued democratization of the globe, an established global economy, an established global media presence, and the United States' contemporary role as an overseas political leader.

We need a significantly restructured force, tailored to meet emerging threats, and comprising the elements of deployability, lethality, restraint, and an ability—and willingness—to execute diverse and extended operations in environments ranging from "peacekeeping" and similar operations other than war (OOTW) to major theater war (MTW). The IBCT is the nascent expression of this realization, and integrating of such a force into the larger, contemporary Army is the goal of the ongoing effort at Fort Lewis.

With this goal in mind, we must realize that mission requirements of the IBCT must be carefully focused. Fielding a successful, effective force with a definitive mission essential task list (METL) requires changes to both doctrine and modified tables of organization and equipment (MTOEs). Concurrent with the development of this force is the effort to

integrate an advanced information system. Either task would be difficult alone; attempting them together requires close analysis of each competing effort, and of the synergistic effect of simultaneous development.

Capabilities, Limitations, and Emerging Concepts

The IBCT accepts risk through decreased survivability by a reduction in armor protection and firepower in its proposed principal weapons platform, the light armored vehicle (LAV) with a 105mm main gun. This risk is mitigated by doctrinal recognition of a need to augment the IBCT with more robust, conventional armored forces at the high end of the conflict spectrum mitigates. Other mitigating factors are the situational awareness provided by the FBCB2 as an integrated command and control platform for the collection and dissemination of intelligence, the rapid identification of and reaction to enemy threats, and the enhanced integration of supporting forces at all levels.

Capabilities. The IBCT and FBCB2 provide the commander with a robust force structure, well equipped to meet a variety of threats. Company commanders have significant assets under their direct control: sniper teams equipped with both .50 caliber and 7.62mm rifles, multiple-caliber mortar systems (120mm, 81mm, and 60mm), mounted infantry platoons made up of robust rifle squads and weapons squads, integrated sharpshooters and designated Javelin gunners, and a mobile gun system platoon.

This "arms room" concept allows the commander to select force levels and weapons appropriate to the mission, and also to task organize his individual platoons and provide them with enough firepower to operate independently in a diverse and extended environment. The FBCB2 provides the command and control necessary for individual platoons to conduct dissimilar missions at the same time in geographically separated areas.

Further, a high level of mobility, situational awareness, enhanced target acquisition, and improved fire control measures give unusual agility to the company commander oper-

ating independently within the higher commander's intent.

Limitations. A high level of training covering a broad spectrum of missions is necessary to ensure that this force can perform all of its intended roles effectively. A METL will be difficult to develop; the risk is an unmanageable level of assigned tasks and insufficient time to train on all of them. This is inherent in the IBCT's role as a full-spectrum force, prepared for quick insertion into any environment with little notice.

The current FBCB2 system is nearly useless once operations have begun. Conventional analog systems accomplish most communications after the line of departure (LD) is crossed. Some commanders have mitigated this by tasking the executive officer to conduct real-time battle tracking and reporting through the FBCB2 while the commander, mounted or dismounted, conducts the fight. Synchronization becomes a shared duty.

Increased agility and decision-making will be required of leaders at all levels. Current service school programs of instruction do not teach these skills in sufficient depth.

Communications are an essential component of distributed operations. For dispersed units, the disruption of communications is a significant vulnerability.

Service and support for geographically isolated forces is more difficult, particularly for mounted forces.

If it is to operate effectively, this force requires an enhanced information systems management capability. The current MTOE tasks leaders to be the principal operators of the FBCB2, which becomes problematic during dismounted operations.

Emerging Concepts. The IBCT is emerging as a multi-functional team that retains lethality as a *capability* but not as its principal purpose, except in major theater war. Commanders are proving imaginative in the use of restraint and invitations to negotiate or surrender, followed by the appli-

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cation of an appropriate level of force, and should be encouraged. This additional consideration will, of course, recognize the presence of civilians on the battlefield, and their likely effect on operations.

- Commanders also show initiative in the use of the FBCB2 to execute battle command and situational awareness, rapidly distributing intelligence and force disposition (friendly and enemy) to the lowest possible level.

- The complex nature of distributed operations has led some commanders to conclude that a company needs a robust tactical operations center in a parallel battle-tracking role.

- Some commanders have discussed the need for an as-

sistant platoon leader, perhaps a warrant officer, to provide positive control of mounted assets while the platoon leader and platoon sergeant fill traditional dismounted roles. This individual would also serve as the platoon's principle FBCB2 administrator.

- Commanders recognize the need for forward observers at the platoon level.

Technical Considerations

The FBCB2 is a fundamentally sound concept that seeks to incorporate advanced information systems into a conventional military force to enhance command and control. It is important to remember, in the discussion that follows, that the FBCB2, in its current form, is a prototype system. Flaws are to be expected. Indeed, the developmental phase of any information system involves identifying the strengths and weaknesses of the proposed system, followed by further modification and testing. User feedback and subsequent modification are a fundamental part of information system design. Early frustration with a developing system must not lead to a belief that the system cannot function as desired.

Three issues immediately present themselves when evaluating the FBCB2 independently of its role in combat and OOTW operations:

Bandwidth and Throughput. The military services are allocated a finite slice of the available electromagnetic spectrum in which to conduct information operations. Any bandwidth assigned to the FBCB2 in its role as a data transmission system limits the bandwidth available for conventional, analog (radio) communications. The same is true in reverse.

Currently, such limited access to the spectrum manifests itself as a slow throughput time for relatively small data packets (25 minutes for one page of text is one example) transmitted through the FBCB2. To achieve full efficacy of the FBCB2, the Army must remedy this shortfall, and without significantly compromising current analog capabilities.

It is possible that spread-spectrum, frequency hop technology will moderate this drawback, particularly if shared frequency use through digital timing and encoding allows simultaneous transmission of multiple data over a limited spectrum. This technical question must be resolved in such a manner as to allow the seamless integration of digital and analog communications over a limited spectrum with full transparency to the end user.

Currently, the FBCB2 functions well in combat support (CS) and combat service support (CSS) environments. Such uses are not as time-sensitive as communication in a close battle environment. Conventional analog systems accomplish most communications beyond the LD.

This fact has broader implications than may seem evident. First, an antagonist with even limited means of electronic surveillance may be able to interpret the rise in analog communications as an indication that operations are imminent. This presents a challenge to the doctrinal requirement for surprise in offensive operations. Second, if the system is developed in such a way as to permit continuous use of the

FBCB2 by a stay-behind operator while the commander and key leaders conduct the battle using conventional means, the principle of unity of command may be violated.

Interface. The current system consists of a mix of pull-down menus, text-entry boxes, and Graphical User Interface icons. Not all force components need all elements of the FBCB2 interface at all times.

CSS functions, for example, do not need an interface as intuitive as those proposed for execution in a close battle environment. Such functions, and CSS conditions, generally enable the user to spend more time preparing and editing messages than is possible under conditions involving imminent or actual enemy contact. In the latter case, such messages must require only seconds to execute if they are to successfully replace analog transmissions.

Certain transmissions of the latter type, if properly interfaced with the user, improve the responsiveness of CS assets. For example, if the fire support officer wanted to process a call for fire and he was presented a set of point-and-click icons representing mission type (troops in the open, vehicles, etc.), and had the ability to select the target grid with the click of a mouse on the digital overlay, then a call for fire could be accomplished in three mouse clicks. One click would select target type, one would select the grid, and the third would send the request. Since the location of the requestor and all associated elements is known through GPS technology, the elements of the call for fire can be instantly formatted, and fires can be cleared much faster than by conventional means.

A similar case can be made for the reporting of certain battlefield conditions. Obstacle types could be selected from a set of icons, the grid (or trace) indicated with a click of the mouse, and the information sent simultaneously to all elements, with graphics immediately updated across the brigade.

Certain other conditions apply: Text boxes do not currently allow the user to view an entire page of text without obscuring the digital map. Users must be able to select window size and location. One of the major advantages for the commander is visual situational awareness through real-time update of element (vehicle) positions. A real time "chat box" would also be useful, providing a second communications channel in the event analog communications jammed. Finally, icon size on the screen is a current concern of users. Most icons are larger than surrounding terrain features; magnification of the digital map to overcome this often results in a screen that shows no more than the commander can see by stepping outside his vehicle and taking a look around.

In summary, a more intuitive, more responsive, and more limited interface is necessary to realize the full potential of the FBCB2.

System Limitations and Transition from Digital to Analog. At some point, it becomes necessary for the commander and subordinate leaders to dismount. This takes the leaders away from the digital interface offered by the FBCB2, and they must use analog systems. Two issues are paramount: First, doctrinally, how do we determine the

time, conditions, or method of transitioning from digital to analog communications? Second, if we leave behind an FBCB2 operator, how do we avoid diluting unity of command?

The way mechanized units operate may offer a partial solution. Key leaders (executive officer, first sergeant) can remain behind with the vehicles and help the commander execute the battle by way of concurrent analog communications. When the FBCB2 is distributed to the platoon and squad level this becomes problematic. A second solution is

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to offer the dismounted leader a partial interface, a portable screen that provides graphics and element locations, but does not require feedback from the operator. This maintains situational awareness for the leader; analog communications provide the means to instruct stay-behind FBCB2 operators.

Further, real-time GPS uplinks carried by key leaders that provide center-of-mass locations for their respective elements will enhance both command and control and situational awareness. This is analogous to 18th and 19th century commanders observing the disposition of forces on the battlefield by means of unit colors.

In conclusion, the principle limitation of the FBCB2 lies in the ability of the dismounted leader to provide feedback. Time constraints and interface do not allow the effective transmission of information, only its receipt. Given time, voice recognition software may provide a solution to this; in the interim, doctrine must deliberately address leaders' actions upon isolation from the FBCB2. Such doctrine may place specific constraints and requirements on any stay-behind operator of the FBCB2 and dismounted leaders.

Doctrinal Considerations

MTOE. Yet unaddressed is the issue of who will be the principle operator of the FBCB2. It is simply not possible to give this responsibility to the traditional operators of analog information systems—leaders, radiotelephone operators, drivers. First, such soldiers often lack the training and skills (such as typing) necessary to be effective operators. Second, such soldiers already have an important and demanding set of duties to accomplish, particularly in a close battle environment.

Also at issue is the question of administering the overall systems. Organizations that use information systems as an integral part of their operations normally maintain a cadre of technical professionals to maintain and administer their systems. Nominally, such cadres may include systems administrators, programmers, technicians, and operators. Such cadres ensure proper functioning of the system for end users. No such parallel structure exists within the organization of

the IBCT. This is, in my opinion, a grave oversight.

Information systems are not the same as weapon systems. Timely evacuation to a support organization for maintenance is not possible, given the complexity of most information systems. Combat leaders lack the training and the requisite time to maintain the functionality of an integrated information system under combat conditions. The deep integration of the FBCB2 into the IBCT command and control structure worsens the effects of this limitation.

To successfully integrate an information system such as the FBCB2 into any force structure and doctrine, we must come to terms with the legitimacy and inevitability of the need for a technical component of the force tasked with operating and maintaining the unit's systems. This force component will not include "combat troops" in the accepted sense. Nonetheless, such a force component must have an inherent understanding of the combat functions and requirements of trigger-pullers on the ground. Such a component may be recruited as technical professionals or warrant officers from among the combat arms force at large, or, alternatively, it may be developed independently through specialized, focused training.

A typical force component would include a systems administrator and programmers at battalion level, as well as technicians and operators distributed throughout subordinate units. The successful integration of advanced information systems into a combat force requires acceptance of this concept, no matter how unpalatable it may be to traditionalists.

Precedent for this is evident in the blurring of the lines between rear, close, and deep operations and their participants.

Tactics, Techniques, and Procedures. Current doctrine provides commanders with adequate guidance in the form of rules of engagement, operations orders, and standing operating procedures. Lacking is a definitive set of tasks, and the methods by which to accomplish them, oriented toward a force that must rapidly move between OOTW and MTW operations. The agility to make this transition rapidly from OOTW to a limited, distributed combat focus is not defined in current doctrine. Indeed, it may be necessary to define a narrower role for the IBCT.

The capabilities necessary for a force to effectively execute combat operations and those of a force to successfully execute OOTW operations may not be found in one force structure. Instead, it may be necessary to define complementary forces, each with a definitive mission, and the ability to conduct a seamless battle hand-off at the point of transition from OOTW to combat operations. Since well-established doctrine exists for traditional combat force structures, my comments here will be limited to the organization and capabilities of an OOTW oriented force.

The IBCT is a response to a changing geopolitical environment. Inherent in its conception is an awareness of the need for a force that can quickly and effectively respond to non-mature threats involving large numbers of civilians intermingled with combatants in an urban environment. Accordingly, this force should contain those elements necessary

to perform its principally OOTW-oriented focus while maintaining sufficient combat power to defeat (offensively or defensively) a conventional threat for a certain period of time.

This force must contain the elements necessary to provide police functions, basic engineering, civil affairs administration, medical services, sustainment services, and third-party combatant neutralization. At the same time, it must retain the lethality to conduct limited offensive and defensive operations in support of force protection and contingency operations, predicated upon its relief or augmentation by a more robust, strictly combat-oriented force.

This force could serve as a pre-combat or a post-combat force, able to execute civil missions in a hostile environment that does not involve unrestrained combat. In a pre-combat role, this force would serve as a presence intended to forestall combat, gather intelligence, and, possibly, serve as a security or isolating force while surgical raids are carried out by appropriate forces. Upon the initiation of broader hostilities, the force must be able to protect itself long enough to allow the theater employment of more robust combat forces.

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In a post-combat role, this force would assume the previously mentioned functions following the cessation of broader hostilities.

What seems certain is that integrating all of these functions into one force poses obstacles: Combat forces are trained for combat, and are ill-suited to non-combat missions in a complex environment. The reverse is often true as well.

An example is the case of a raid conducted by an IBCT company. The objective of the raid was to capture a general officer of the opposing force (militia-style regulars) who was reported to be in town for a meeting. The OPFOR was hostile to the company, and antagonistic toward a part of the town's population (based on ethnic derivation). The company was required to raid the town under these conditions and capture the general.

In the execution, the commander initiated the raid with mortar fire, which killed the target and wounded a number of civilians (the mortar fire was intended to fall behind the town as an isolating element). Further, realizing the source of the attack, the OPFOR killed a number of civilians in retribution. The event culminated in a full-scale attack by the company, brilliantly and effectively executed, but for the unintended effects of the destruction of a portion of the town and the killing and wounding of a large number of non-combatants due to the level of lethality employed.

Clearly, this is not the goal of American OOTW. Just as

clearly, the kind of "surgical" operation required of the company was beyond its means and training.

As an alternate solution, such a company might play a supporting role—intelligence gathering, isolation of the objective to allow surgical assets such as Delta Force to execute the raid, and subsequent control of the situation through psychological operations, show of force, and area presence to maintain goodwill and prevent both a larger conflict and large-scale destruction of civilian infrastructure and civilian casualties inflicted by an angered OPFOR.

Another commander chose to surround the town and offer the enemy an opportunity to surrender. When the offer was not accepted, the commander initiated a raid with significant firepower and defeated the enemy forces. Again, the raid was well planned and executed, but the invitation to surrender gave the general an opportunity to escape, and resulted in significant damage and civilian casualties.

The advantage of the second approach lies in its impact on subsequent operations: Enemy forces might more quickly accept opportunities to surrender. Either approach, however, is likely to reduce goodwill toward U.S. combat forces if lethality is not balanced with restraint and its effects more precisely targeted.

All of this requires a fundamental change in our approach to force development and employment. The IBCT must not become a traditional, mounted infantry force with a combat focused METL and the capabilities of advanced information systems.

In its place, the Army must develop a force capable of dealing with the complexities involved in distributed OOTW and concurrent, though limited, combat operations. This force must be able to mount a significant offensive/defensive response to an increased threat in the short term.

Force Application and the Role of the IBCT

The integration of advanced information system technology is independent of the nature of any newly developed force. The IBCT provides a platform to develop a new force structure, and a platform to develop and integrate a new technology. Defining the role of the IBCT in the transformed Army requires that we consider each aspect separately.

There is no inherent tie between the application of force to achieve political ends and the technological means of application of such force at the company and platoon level. The IBCT seeks to combine these two goals. The result is a skewed perception, not only of the role of the IBCT, but of the FBCB2 as it relates to broader integration in the force at large.

My recommendation is to continue using the IBCT to develop both a new force and a new information system compatible with all force components, but at the same time to recognize that the two are not contingent upon each other. I recommend independent IBCT and FBCB2 development.

This is not the stated goal of senior officers responsible for fielding the IBCT/FBCB2. However, recognizing the need for a functional FBCB2 as a necessary component of the IBCT does not mean that parallel development of the FBCB2 must occur at the user level, simultaneously with the development of tactics at the company level.

Synchronizing proposed refinements to the FBCB2 with full fielding to all components of the IBCT, concurrently with the fielding of the IBCT's equipment, offers a better opportunity for success than imposing a partial fielding that limits capabilities. In the interim, while FBCB2 development continues, forces should be trained on those specific tasks executed at platoon level and below.

The FBCB2 and the IBCT are not ready for full-scale, integrated, distributed operations at company and battalion levels. By their very nature, such operations require a functioning FBCB2, and the actual weapons platforms, instead of surrogates. Once we resolve the many issues arising from a restructuring of this magnitude, however, we will be better able to respond credibly and effectively to the challenges that will inevitably confront us.

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